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1. Scope

This Standard Operating Procedure (SOP) applies to the staff and students using the Aneroid Sphygmomanometer (GIMA) in the Pharmacy Practice Resource Unit (PPRU) at the Pharmacy Department, University of Malta.

2. Objective

To describe the procedure for use and maintenance of the Aneroid Sphygmomanometer (GIMA).

3. Definitions

3.1. **Blood Pressure (BP):** Pressure exerted on the artery tube while blood flows through the arteries.

3.2. **Diastolic BP:** Minimum pressure in the arteries when the heart is at rest.

3.3. **Plenum Chamber:** Pressurised housing containing a fluid at positive pressure (pressure greater than the surroundings). The function of the plenum is to equalise pressure for more even distribution due to irregular supply or demand.

3.4. **Systolic BP:** Maximum pressure being exerted when the heart is contracting.

4. Responsibility

4.1. The members of the Department of Pharmacy (staff and students) are responsible for following this SOP.

4.2. The designated Laboratory Officer or Laboratory Assistant is responsible for ensuring that this SOP is followed.
5. Procedure

5.1. Diagram of Aneroid Sphygmomanometer (GIMA)

- a: Gauge Needle (Indicator)
- b: Cuff
- c: Tube
- d: Scale (Gauge)
- e: Bulb
- f: Screw on the bulb
5.2. Use

5.2.1. Apply the cuff on a bare arm, 2-3cm above the elbow joint (SOP/PD/235_01/A1), then prop the forearm to keep the device at heart level (SOP/PD/235_01/A2).

5.2.2. Position the earpiece of the stethoscope on the artery under the cuff.

5.2.3. Using the bulb, pump the cuff up to approximately 20mmHg beyond the level of the individual’s systolic BP, until the brachial artery is blocked i.e. maximum level.

5.2.4. Turn the release/deflation screw on the bulb to measure the BP, unscrewing it slowly in a counter-clockwise direction; the ideal deflation speed is around 2-3mmHg/sec.

5.2.5. Check the deflation speed visually.

5.2.6. Record the systolic BP when the pressure is indicated by the gauge needle.

5.2.7. Record the diastolic BP when the pressure is indicated by the gauge needle.

5.2.8. Open the release valve completely until the air begins to be released out of the cuff; BP measurement is now complete.

5.3. Maintenance

5.3.1. Wipe the gauge and bulb with a damp cloth.

5.3.2. Remove the plenum chamber and wipe with a damp cloth.

5.3.3. Wipe the tubes with a damp cloth.

5.3.4. Wipe the liners of the cuff with a damp cloth or wash them with soap and cold water; If the latter method is used, rinse the armbands with clean water and leave them to dry since nylon cuffs must not be ironed.
5.4. Flow Charts

5.4.1. Use

Start

Apply the cuff on a bare arm, 2-3cm above the elbow joint (SOP/PD/235_01/A1), then prop the forearm to keep the device at heart level (SOP/PD/235_01/A2)

Position the earpiece of the stethoscope on the artery under the cuff

Using the bulb, pump the cuff up to approximately 20mmHg beyond the level of individual’s SBP until the brachial artery is blocked i.e. maximum level

Turn the release/deflation screw on the bulb to measure BP, unscrewing it slowly in a counter-clockwise direction; ideal deflation speed is around 2-3 mmHg/sec

Check deflation speed visually

Record the SBP and DBP when the pressure is indicated by the gauge needle

Open the release valve completely until the air begins to be released out of the cuff; BP measurement is complete

End
5.4.2. Maintenance

Start

Wipe the gauge and bulb with a damp cloth

Remove the plenum chamber and wipe with a damp cloth

Wipe tubes with a damp cloth

Wipe liners of the cuffs with a damp cloth or wash them with soap and cold water; if the latter method is used, rinse the armbands with clean water and leave them to dry since nylon cuffs must not be ironed

End
6. Precautions

6.1. Ensure that the patient having his/her BP measured remains seated and calm and that his/her forearm is resting at heart level with the inside of the arm facing up.

6.2. After rinsing the cuffs with clean water, leave them to dry since nylon cuffs must not be ironed.

7. References

GIMA Aneroid Sphygmomanometer Use and Maintenance Book. Italy: GIMA; 2008

8. Appendices

SOP/PD/235_01/A1 - Diagram of cuff application on the arm

SOP/PD/235_01/A2 - Diagram of cuff at the same level as the heart

9. Revision History

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<th>Version Number</th>
<th>Amendments/ Reasons for change</th>
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<td>01</td>
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SOP/PD/235_01/A1 - Diagram of cuff application on the arm

Diagram of cuff application on the arm
SOP/PD/235_01/A2 - Diagram of cuff at the same level as the heart